

Docket No. 291161 US0X PCT

10/579916  
1AP20 Rec'd PCT/PTO 19 MAY 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Michiyasu KOMATSU, et al.

SERIAL NO: New U.S. PCT Application Based on PCT/JP04/17531

GAU:

FILED: Herewith

EXAMINER:

FOR: HIGH THERMALLY CONDUCTIVE ALUMINUM NITRIDE SINTERED PRODUCT

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- ☒ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☐ Attached is a list of applicant's pending application(s), published application(s) or issued patent(s) which may be related to the present application. In accordance with the waiver of 37 CFR 1.98 dated September 21, 2004, copies of the cited pending applications are not provided. Cited published and/or issued patents, if any, are listed on the attached PTO form 1449.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☐ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.G./

Form PTO 1449 (Modified)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY DOCKET NO. 291161US0X PCT		SERIAL NO. 0916 New U.S. PCT Application Based on PCT/JP04/17531	
LIST OF REFERENCES CITED BY APPLICANT				APPLICANT Michiyasu KOMATSU, et al.			
				FILING DATE Herewith			GROUP
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES NO		
	AO	8-508461	09/10/96	JP (equivalent of US5320990 & WO94/22787)		NO	
	AP	4-42862	02/13/92	JP		NO	
	AQ	5-105525	04/27/93	JP		NO	
	AR	5-238830	09/17/93	JP		NO	
	AS	4-27184	05/11/92	JP		NO	
	AT	2000-178072	06/27/00	JP		NO	
	AU						
	AV						
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)							
	AW						
	AX						
	AY						
	AZ						<input type="checkbox"/> Additional References sheet(s) attached
Examiner /Karl Group/					Date Considered 04/11/2008		
*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.G./

New U.S. PCT Application Based on PCT/JP04/17531

Michiyasu KOMATSU, et al.

Docket No. 291161 US

#### STATEMENT OF RELEVANCY

- 1) References AO - AR have been cited in the International Search Report. A copy of these references is being submitted herewith.
- 2) References            have been cited in the corresponding            Search Report. A copy of these references is being submitted herewith.
- 3) References            are discussed in the specification. A copy of these references is being submitted herewith.
- 4) References AS - AT are additional prior art known to Applicant. A copy of these references is being submitted herewith.

**AS:    JP4-27184**

This prior art information discloses an aluminum nitride substrate in which X-ray diffraction intensity ratio ( $I_{YAG}/I_{AIN}$ ) of X-ray diffraction intensity ( $I_{YAG}$ ) based on yttrium-aluminum-garnet type crystal with respect to X-ray diffraction intensity ( $I_{AIN}$ ) based on aluminum nitride crystal is 0.05 or less at the surface of the aluminum nitride substrate.

The method of manufacturing the aluminum nitride substrate of the prior art is characterized by comprising the steps of: preparing an aluminum nitride substrate; and grinding and removing a surface portion of the aluminum nitride substrate such that X-ray diffraction intensity ratio ( $I_{YAG}/I_{AIN}$ ) of X-ray diffraction intensity ( $I_{YAG}$ ) based on yttrium-aluminum-garnet type crystal with respect to X-ray diffraction intensity ( $I_{AIN}$ ) based on aluminum nitride crystal becomes 0.05 or less.

**AT:    JP2000-178072**

This prior art information discloses an aluminum nitride sintered body containing 0.5 – 20 wt% of at least oxide of rare earth element ( $RE_2O_3$ ) and oxide of alkaline earth metal (RO) at a weight ratio (RO/  $RE_2O_3$ ) of 0.2 – 0.5, and totally 0.1-5.0 wt% of silica ( $Si_2O_3$ ) and alumina ( $Al_2O_3$ ). The grain boundary phase of the aluminum nitride grains contains a YAG type crystalline phase and an alkaline earth metal oxide-alumina based crystal phase. The ratio (Y/RA) of the peak intensity Y of (211) plane in the YAG crystal phase with respect to the peak intensity RA of (220) plane in a phase which has an alkaline earth metal oxide to alumina molar ratio of 1:1 in the alkaline earth metal-alumina base crystal phase is controlled to be 3 – 15, thereby to obtain an aluminum nitride sintered body having a three-point bending strength of 530 MPa or higher.